APPENDIX I TABLE OF CONTENTS:

MEDFORD STORMWATER QUALITY & DETENTION FACILITIES
Technical Requirements

General.

This section sets forth uniform requirements for the implementation of Sections 10.486 and 10.729 of the Medford Code. The objectives of these sections are:

(1) To provide the requirements for the design and construction of stormwater quality and detention facilities.

(2) To provide the requirements for the operation and maintenance of stormwater quality and detention facilities.

Detention Requirements:

(1) All stormwater detention facilities shall:

(a) Be reviewed and approved by the jurisdictional agency or department;

(b) Be connected to a recognized stormwater conveyance feature or facility with legal access to said facility;

(c) Be designed and constructed off-line, or separate from offsite drainage passing through the site, when the offsite drainage constitutes more than 2 times the onsite flow;

(d) Consider all the drainage, which will drain off the site;

(e) Have an over-flow structure capable of safely passing the 25-year storm to an approved stormwater facility;

(f) Have maintenance access to every component of the facility; and

(g) Be designed by a Professional Engineer registered in the State of Oregon, with plans and supporting calculations.

(2) This sub-section sets forth the design requirements for the two most common types of detention facilities encountered: surface detention and underground detention. Surface detention is usually in the form of ponds, swales, or depressed areas in parking lots. Underground detention is typically used in situations where site constraints do not allow surface storage. Most underground facilities use oversize pipe to create the necessary storage. Where practical, detention facilities shall be ponds constructed in open space and landscaped with native vegetation, in accordance with Appendix A, of the Rogue Valley Stormwater Quality Design Manual. Detention facilities in both cases will require a control structure to regulate the flow out of the detention facility. Requirements for each type of detention facility and the control structure shall be as follows:

(a) Surface Detention Requirements (Ponds, Swales, Parking Lots)

1. Maximum Bank Slope: 3:1 (Preferred is 4:1)
2. Maximum Depth of water: 12” in parking lots or other areas of vehicular or pedestrian use, and 4 feet in ponds not subject to vehicular or pedestrian use.
3. Minimum freeboard in ponds is 12 inches (Parking Lots excluded).
4. At a minimum, all ponds shall be vegetated with an approved grass seed mixture. Other landscape material on the side slopes is preferred. Bark or bark dust as a landscape material is prohibited.
5. Provide a forebay, or first wet cell, which is 25-35% of the total volume.
6. An all-weather access to every element of the pond as necessary to facilitate cleaning. In addition to the requirements of Medford Code, Section 10.475, an all weather

access is any surface, which would support H-20 vehicle loading during any weather condition.

7. Ponds with a floor area less than 800 square feet shall have a minimum freeboard of 6-inches. Ponds with a floor area greater than 800 square feet shall have a minimum freeboard of 12-inches.

(b) Underground Detention Requirements (Pipes, Vaults, Tanks)

1. Man access is to be provided at a minimum spacing of 200 feet, with access at the control structure, and at the farthest upstream end of the system.
2. Designed for a minimum of H20 surface loading.
3. Provide a minimum of one foot of dead storage at or near the control structure for sediment accumulation, or an additional 10% in the entire system.
4. Maximum depth to invert shall be 15 feet.

(c) Control Structures Requirements (for either type of detention facility)

1. Shall be tamper proof.
2. If grated openings are provided, they shall be sloped and approved by the controlling agency.
3. The minimum allowable diameter for an orifice is one inch. Orifices shall be designed for the water quality storm as well as the 10-year storm.
4. Only one control structure per project. Where practical, multiple control structures will be allowed provided the flow from each structure is 0.08 cubic feet per second or greater.
5. Shall be designed to pass the 25-year storm event as an overflow without causing flooding of the contributing drainage area.

(3) Where practical, only "off-line" facilities, which only receive flow from the site to be managed, shall be used. "In-line" facilities that will receive flow from sources other than the required flow to be managed, will only be permitted in areas where site limitations won't allow an "off-line facility. If a facility is "in-line", it shall be designed to pass the incoming flow without damage to the facility or its function, and the storage increased accordingly.

(4) Appropriate engineering, including bioengineering measures, shall be used to protect critical and sensitive areas from flow erosion. These areas include riparian areas and stream corridors subject to erosive flow conditions. Depending on the application and location of the stabilization technique, rock and other non-erosive materials could be integrated into the method to provide protection to the area. If rock is used, the rock matrix shall be interplanted with appropriate native vegetation to help screen, shade, and further stabilize the area subject to high flow velocity.

Operation and Maintenance

(1) All stormwater detention facilities shall have an Operation & Maintenance Plan (O & M Plan). At the time of construction plan submittal of plats, PUD plans, site plans, or building permits, the Project Engineer shall submit an O&M Plan describing required type and frequency of long-term maintenance of the detention facilities and identification of the person(s) responsible for maintenance.

(2) At a minimum, all areas within detention facilities and easements associated with these facilities shall be maintained in accordance with the approved O & M Plan. An O & M Plan shall assure that a detention facility is kept in good working condition so that it continues to perform its design functions in perpetuity. The O & M Plan shall address all aspects of facility maintenance including those listed in the table of maintenance requirements for the particular type of detention facility. Once the O & M Plan has been approved by the City, a copy of the O & M Plan shall be provided to the City and the property owner or responsible party.

(3) Requirements for Operation and Maintenance Plans
The following information and documents shall be included in the O&M Plan and shall be submitted to the City for review and approval prior to obtaining a building permit or approval to construct a stormwater detention facility in a plat or PUD:

(a) A completed O&M Plan Form, except for signature. A Blank form shall be provided by the Controlling Agency .
(b) A copy of the construction plans for the facility with site map.
(c) A copy of the recorded "Declaration of Covenants for the Operation and Maintenance of Stormwater Detention Facilities".
(d) When required, copy of recorded O & M Agreement, including copies of all proposed easements associated with the detention facility including a map of the tax lot(s) showing the location of the easement
(e) A description and diagram of the route that is to be used to access the facility for inspections and maintenance.
(f) The table of maintenance requirements for the specific type of facility shall be attached as part of the O&M Plan. The Table will be provided by the Controlling Agency . Only submit the appropriate maintenance requirements from the Table.
(g) For proprietary systems or systems for which an adjustment to the design was approved, a table of maintenance requirements shall be created by the applicant or manufacturer and attached as part of the O&M Plan.
(h) A plan for responding to a spill of hazardous or environmentally damaging substance into the flow control facility. The plan shall include emergency procedures, an emergency contact, proper methods for cleanup and disposal of spilled materials, and mitigation of damage or contamination to the Best Management Practice (BMP).

(4) Requirements for Operation and Maintenance Agreements
An Operation and Maintenance Agreement (O & M Agreement) is required whenever there are multiple responsible parties. The intent of the O & M Agreement is to ensure that all parties involved are aware of their responsibilities regarding maintenance of the stormwater detention facility. The Agreement must be signed by all responsible parties and specify who is responsible for which aspects of facility maintenance. The Agreement along with the O & M Plan must be submitted to the City for review and approval prior to construction of the facility. The Operations & Maintenance Agreement must:

1. Be recorded on the deed of all affected properties. Once the Agency has reviewed and approved the O & M Agreement, the responsible parties shall sign the agreement in the presence of a notary public and record the Agreement with the Jackson County

Clerk.

2. The O & M Agreement must be acceptable in form and content with the Agency and the Agency's Legal Counsel.

Construction Inspection Report

After the flow control facility has been constructed on a private facility, but prior to final acceptance, the engineer must file with the Agency a construction inspection report on a form provided by the Agency.

Operations & Maintenance Plan Form

Print or type the following information:
Building Permit number for the stormwater facility: _____
Property owner/owners: _____
Daytime phone number (with area code) (_____) _____ - _____
Evening phone number (with area code) (_____) _____ - _____
Property owner's designee, (only required if a party other than the property owner will be responsible for maintaining the stormwater facility): _____
Designee's daytime phone number (with area code) (_____) _____ - _____
Designee's evening phone number (with area code) (_____) _____ - _____
Emergency contact name:_____
Emergency contact phone number: (_____) _____ - _____
Mailing address, including zip code (the City will use this address if further correspondence is required):
_____
Real property description for the stormwater facility:
_____
Address for the stormwater facility:
_____

The following materials shall be attached and considered part of this plan:

1. Copies of the approved construction plans for the facility and a site map showing the facility location.

2. A copy of the recorded "Declaration of Covenants for the Operation and Maintenance of Stormwater Facilities".

3. When required, copy of recorded O & M Agreement, including copies of all recorded easements associated with the stormwater facility including a map of the tax lot(s) showing the location of the easement(s).

4. The table of maintenance requirements for the specific type of facility shall be attached as part of the O&M Plan. The Table will be provided by the City of Medford Public Works Department. Only submit the appropriate maintenance requirements from the Table.

5. For proprietary systems or systems for which an adjustment to the design was approved, a table of maintenance requirements shall be created by the applicant's engineer and attached as part of the O&M Plan.

6. A description and diagram of the route that is to be used to access the facility for inspections and maintenance.

7. A plan for responding to a spill of hazardous or environmentally damaging substance into the flow control facility. The plan shall include emergency procedures, an emergency contact, proper methods for cleanup and disposal of spilled materials, and mitigation of damage or contamination to the Best Management Practice (BMP).

Declaration of Covenants for the Operation & Maintenance Of Stormwater Facilities

Declaration of covenants affecting the real property described in Exhibit "A", within the City of Medford, Jackson County, Oregon (hereinafter referred to as the "property"), for the express purpose of causing the owners of said property to have knowledge of, and be subject to performing the operation and maintenance of the stormwater detention facility located on the property:

NOW THEREFORE, the undersigned _____, owners of said property, do hereby declare that they, their heirs, successors and assigns, will manage, operate, and maintain said stormwater facility as prescribed below:

1) The property owner/owners or their designees agree to submit a copy of the completed O&M Plan Form, a recorded copy of this Covenant, as well as a recorded copy, if needed, of an O&M Agreement to the City of Medford, hereinafter referred to as "City", once construction of the Stormwater facility is complete.

2) This Covenant shall remain in full force and effect unless canceled or modified with the written consent of the City and the property owner/owners or their designees.

3) The property owner/owners or their designees shall keep a copy of the O&M Plan Form, this Covenant, and the as-constructed plans of the facility available on the premises. These shall be made available to City staff upon request.

4) All areas within the stormwater facility and easements associated with the stormwater facility shall be maintained in accordance with the O&M plan.

5) Modifications of physical features within the stormwater facility shall not be made by property owner/owners or their designees without receiving prior written authorization from the City.

6) The property owner/owners or their designees agree to contact the City with updated names, addresses, and phone numbers for owners, responsible parties and emergency contacts should the information on the Operation and Maintenance Plan Form change.

7) The property owner/owners or their designees shall maintain, repair or replace part or all the facility as necessary to ensure it is functioning as originally designed or as modified per written agreement with the City.

8) The property owner/owners or their designees should inspect the facility in accordance with the approved table of maintenance requirements submitted with the O&M Plan Form to ensure it is functioning properly, but at a minimum, inspections must be performed annually.

9) If the system is not functioning properly or any of the conditions requiring corrective actions as shown on the table of maintenance requirements, corrective actions will be

taken within 15 calendar days unless previous arrangements are made with the City.

10) The property owner/owners or their designees shall keep records of system inspections and maintenance. Records shall note inspection dates, any conditions requiring maintenance actions, and maintenance conducted. Records shall be made available to City staff upon request.

11) City staff shall have the right to enter upon the property for purpose of inspecting, and reasonably monitoring performance of the flow control facilities using the maintenance access routes specified in the O&M plan.

12) City staff shall make a reasonable effort to notify the property owner/owners or their designees prior to routine inspections. Unless otherwise agreed upon between City staff and the responsible party, routine inspections shall be scheduled Monday through Friday during normal business hours

13) Upon inspection of the facility, City staff will notify the property owner/owners or their designees in writing of any noted conditions, or practices that are not in compliance with the approved O&M Plan and will specify a time frame for corrective actions.

14) Failure to correct a defective condition within the time frame specified by the City inspector or continued non-compliance with practices and procedures specified in this O&M Plan may result in a violation per Section 4.900 City Code.

15) The property owner/owners or their designees shall not apply or dump any pesticides, herbicides, petroleum-based products or other hazardous or foreign substances within a stormwater facility.

16) Stormwater facilities as well as the adjacent right-of-way, easements, and/or private property upon which they reside are subject to all nuisance provisions of Medford Municipal Code, including control of noxious weeds, vegetation and removal of litter and debris, except as they relate to the approved vegetation within the water quality functioning portion of the stormwater treatment facility.

17) Dead vegetation and cutting, including grass cuttings, shall be removed from the stormwater facility and disposed of in accordance with local and State requirements.

18) If a complaint is received or an inspection reveals that a stormwater facility is infested with mosquitoes or other vectors, the property owner/owners or their designee shall eliminate the infestation using first non-chemical methods and secondly, only those chemical methods specifically approved by the County's Vector Control. Acceptable methods include but are not limited to the following:

a) Installation of predacious bird or bat nesting boxes.

b) Alterations of pond water levels approximately every four days in order to disrupt mosquito larval development cycles.

If corrective action has not taken place within 15 days, the City will take corrective action and charge the costs to the subject property owner.

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The above covenants shall run with the land, be enforceable by the City of Medford, and shall be binding upon the property owner/owners, their heirs, successors, and assigns.

IN WITNESS WHEREOF, the property owner(s), sets his (their) hand and seal on this _____ day of _____, 2004

_____

_____
(Owner)

STATE OF OREGON)
)
County of Jackson)

_____, 2004

Personally appeared the above-named _____ _____ and acknowledged the foregoing instrument to be _____ voluntary act. Before me:

_____
Notary Public for Oregon
My Commission expires: _____

THE FOREGOING IS HEREBY ACCEPTED BY THE CITY OF MEDFORD,
Dated _____.

CITY OF MEDFORD

By _____
City Engineer

DRAFT

-EXAMPLE (See MC 10.729(4))-

OPERATION & MAINTENANCE AGREEMENT
FOR
STORMWATER FLOW CONTROL FACILTY

This Operation and Maintenance Agreement is made this ___ day of _____, 20___, by _____, their heirs, successors, or assigns, hereinafter referred to as "Declarant(s)".

The upkeep and maintenance of stormwater facilities is essential to their ability to function as they were designed. All property owners are expected to conduct business in a manner that promotes environmental protection. This Agreement contains specific provisions with respect to facility maintenance.

Whereas, the Declarant(s) are the owner of land (hereinafter the "Real Property") located in Jackson County, Oregon described in Exhibit 'A', attached:

Whereas, the Declarant(s) has received approval for such development by the City of Medford, and in conformance with Section 10.486 of the City of Medford Municipal Code shall construct a stormwater facility (hereinafter referred to as "SF") and shall provide for private maintenance by individual property owners, and a mechanism for enforcement of such maintenance obligation.

Now, therefore, Declarant(s) hereby declares that the SF serving (Name of Subdivision) benefits Lots (___) through (___) therein, and that the benefit of said SF requires that it be maintained in accordance with the Operation and Maintenance Plan, which has been approved by the City for this development, and is attached hereto as Exhibit 'B', and that the maintenance thereof should be borne equally by the respective property owners, and that the SF shall be subject to the following conditions which shall run with the Real Property and shall be binding upon all parties having any right, title, or interest in the Real Property or any part thereof, including their heirs, personal representatives, successors, grantees, and assigns and which shall inure to the benefit of each owner of such properties:

1. Implement the Operations and Maintenance Plan (O & M Plan) approved by the City of Medford for this project.
2. Maintain a record in the form of a log book of the maintenance or repairs performed on the SF. The log book shall catalog the action taken, who took it, when it was done, any problems encountered, and follow-up actions recommended.
3. This Agreement shall remain in full force and effect unless canceled or modified with the unanimous and written consent of the City and the property owner/owners or their designees.
4. The owners of Lots (___) through (___) shall be responsible for the maintenance of the SF, and shall perform periodic inspections, at least once every 12 months, and perform needed maintenance and repairs.
5. Provide the City of Medford access to the SF for the purpose of performing inspections.
6. It is intended that the City of Medford be a beneficiary to this Agreement. In the event that the SF is not inspected, maintained or repaired as required by the O & M Plan, the City of Medford may order and have performed any such inspection and any required maintenance or repairs, provided, however, that the City of Medford shall provide at least thirty (30) days notice of its intention to do so. If the City of Medford completes any maintenance, or repair of the SF, the owners of Lots (__) through ( ) shall each pay an equal pro-rata share of any costs incurred by the City of Medford in connection therewith. If the owner of any obligated property fails to pay its share, the City of Medford shall have enforcement rights as set forth in Sections 9 and 10 of this Maintenance Agreement.
7. The costs of inspection, maintenance and/or repair shall be borne equally by the owners of Lots (___) through (____). The respective contributions shall be made by the owners of Lots (____) through (____) within ten (10) days of presentment of a bill for such inspection, maintenance, and repair.
8. Following inspection, maintenance, and/or repair by the property owners and in the event that one or more owners fails to contribute his or her share of costs for such inspection, maintenance, or repair, the remaining owners shall contribute a proportionate share of such delinquent contribution(s).

9. The owner(s) who contribute a proportionate share of expenses for SF inspection, maintenance, or repair for the owner(s) who fail to contribute his or her share of costs, or the City of Medford acting through Section 6, above, shall have a valid lien on the property owned by the owner(s) who failed to contribute his or her proportionate share of such expenses in the amount of such contribution. The lien shall be a continuing charge on said property (ies) and such lien shall also include all interest, cost of collection and reasonable attorney fees in collecting and enforcing it. Such assessment, together with costs and fees, shall be the personal obligation of the individual owner of such property as of the date when the charge for inspection, maintenance, or repair expenses fell due. The charge shall bear interest at the rate of ten (10) percent per annum from the date such expense comes due. Any owner who shall have paid his share of any SF expense, or the City of Medford may bring an action in law or equity to foreclose the lien against the non-paying owner's property or an action at law against the non-paying owner personally.
10. The lien of assessments provided for herein shall be subordinate to the lien of any first mortgage or trust deed or like encumbrance upon any of the Declarant(s) properties. Sale or transfer of any of the Declarant's properties, shall not affect the assessment lien; PROVIDED, HOWEVER, the sale or transfer of any such property pursuant to a mortgage foreclosure or any proceeding in lieu thereof shall extinguish the lien of such assessment as to payments which became due prior to such sale or transfer. No sale or transfer shall relieve such property from liability for any assessments thereafter becoming due or from the lien thereof.
11. In the event suit, or action, or appeal thereon, is brought to enforce the terms of this Declaration including an action to collect a delinquent contribution, the losing party or parties shall pay the prevailing party or parties' reasonable attorney fees as determined by the Court.

IN WITNESS WHEREOF, this Declaration has been executed on the date first above written by the Declarant.

_____

_____

STATE OF OREGON)

) ss.

COUNTY OF JACKSON) _____, 2002

On this day personally appeared before me:

_____, to me known to be the individual(s) described in and who executed the within and foregoing instrument and acknowledged that they signed the same as their free and voluntary act and deed, for the uses and purposes therein stated.

Given under my hand and official seal this ___ day of _____, 20___.

Before me:

_____

Notary Public for Oregon

My commission expires:_____

STORMWATER MAINTENANCE CHECKLISTS AND FORMS

Inspection and Maintenance Action Checklists

Stormwater Facility Inspection/Maintenance Field Form

Master Maintenance Schedule

INSPECTION AND MAINTENANCE ACTION CHECKLISTS

The following inspection and maintenance action checklists (IMACs) are provided primarily for maintenance field staff. The checklists indicate recommended inspection frequency, conditions to look for, corrective actions, special considerations, and estimated time to perform the work. They can assist management staff with maintenance planning, scheduling, staffing, and budgeting. The work time estimates given on the checklists should be compared to actual effort required to perform each task in the future and revised as necessary.

Continual review, feedback, and revision of the checklists will make them more effective tools in the effort to manage stormwater. Some facilities will have specific maintenance requirements that are not included in these checklists; these requirements should be followed in addition to what is included on the IMACs.

The IMACs define the frequency at which facilities should be inspected for each potential problem condition. The frequencies are defined as follows:

- Storm—After any major storm (0.8 inches or more in 24 hours)
- Monthly—Each month from November through April
- Annual—Once a year in early spring or fall.

Special considerations listed in the checklists are given as code numbers, identified as follows:

1. **Procedures**—Consult the City Engineer prior to performing work.
2. **Waste management**—Dispose per Oregon Department of Environmental Quality standards.
3. **Sensitive area**—Consult the appropriate section of this chapter prior to performing work.
4. **Timing**—Check for optimum seeding/planting time.
5. **Safety**—Follow all safety protocols.
6. **Water quality**—Perform during prolonged dry periods or install temporary erosion and sediment control (TESC) features prior to performing work.

NOTE: Manhole, pipe, or vault entry is confined space. Consult Occupational Safety & Health Administration guidelines.

Inspection and Maintenance Action Checklist — Detention Ponds*

Inspection Frequency			Conditions to Check For	Action	Special Considerations	Man hours/ Action (est.)
Storm	Monthly	Annual				
X	X		**Trash and debris** of more than 1 cubic foot (1 garbage can).	Remove and dispose of waste.	2	1 mh/cf
		x	**Sediment accumulations** exceeding 20 percent of the forebay design depth or 6 inches, whichever is less.	Evaluate whether cleaning can be performed with an eductor, backhoe, or excavator. Perform work or contract out. Record amount of waste collected. Reshape and reseed as necessary.	2, 6	1-2 mh/cy
		X	**Clogging of rock "window"** between forebay and detention area with sediment or debris.	Manually remove or use mechanical equipment as described for sediment removal.	2	0.5 mh/sy
		X	**Missing rock or exposed soil** at top or outside slope of overflow spillway.	Replace rock to design elevation and revegetate as necessary to specifications.	1, 4	0.5 mh/cy
		X	**Erosion around inlets and outlets**, and any berms more than 2 inches deep.	Determine cause of erosion and eliminate it. Stabilize erosion area with rock, vegetation, or appropriate slope protection.	4	1-2 mh/sf
		X	**Settlement of dikes or berms** by more than 4 inches below design elevation.	Repair or build up to original elevation. Evaluate need for future major repair work. Revegetate as necessary.	1, 4	0.5-1 mh/cy
X	X		**Odor, sludge, or unusual color**. Presence of flammable chemicals such as natural gas, oil, and gasoline. Presence of any other chemical pollutants.	Notify appropriate city staff to investigate and determine chemical type. Remove contaminant by appropriate methods and dispose of as directed by hazardous waste protocols. Provide sign or stencil as necessary	2, 5, 6	2-4 mh/cleanup
		X	**Vegetation** that inhibits flow by more than 20%, is a risk to public health (poison oak, stinging nettles, tansy), or is an invasive species (purple loosestrife, blackberry)	Cut or remove vegetation. Consult appropriate city staff regarding use of herbicides and timing of applications.	2, 4, 5, 6	0.5-1 mh/ 100 sf
X	X		**Plugged or missing trash rack**. More than 25% of bar screen area covered.	Remove and dispose of waste. Replace screen as necessary, and take additional measures to prevent future debris accumulations.	2	0.5-1 mh/screen
		X	**Rodent holes.** Any evidence of rodent holes in facility dam or berm, or any evidence of water piping through dam or berm via rodent holes.	Destroy rodents and repair dam or berm. Contact the County Health Department for guidance.		

* Also see IMACs for Monitoring Stations, Facility Access Roads, Fencings, and Grounds Maintenance.

Inspection and Maintenance Action Checklist — Detention Vaults/Tanks/Pipes

Inspection Frequency			Conditions to Check For	Action	Special Considerations	Man hours/ Action (est.)
Storm	Monthly	Annual				
		X	**Sediment and debris** exceeding 15% of the vault/tank height or 6" in depth, whichever is less.	Remove and dispose of waste. Contract for cleaning if necessary.	2	1-2 mh/cy
		X	**Plugged or blocked air vents.** Accumulations of debris or sediment exceed one-half of the vent end area.	Remove and dispose of waste.	2	1-2 mh/cy
		Every 5-yrs	**Cracks** in joints between tank or pipe sections that leak soil into the facility.	Manually seal all cracks with appropriate grout material. Use professional engineer for evaluation as needed.	5	0.5 mh/cy
		Every 5-yrs	**Tank/pipe bent** out of shape	Repair or replace tank/pipe to design. Use professional engineer for evaluation as needed.	1, 5	
X	X		**Missing or open manhole cover.** Locking mechanism difficult to open or lacking more than 1/2 inch of thread; cover difficult to remove.	Replace cover or repair and reinstall. Cover should operate properly and be removed easily by one maintenance person.	None	1-2 mh/cover
X	X		**Cleanout shear gate damaged**, rusted, not watertight or missing. Gate cannot be adjusted by one person. Chain or rod missing or damaged	Repair or replace to meet design standards. Repair, lubricate, or replace gate as necessary. Repair or replace chain or rod as necessary.	None	1-6 mh/repair
		X	**Ladder rungs missing**, misaligned rusted or cracked.	Replace rungs or ladder to ensure structural stability and safe access.	5	0.5-1 mh/rung
X	X		**Odor, sludge, or unusual color**. Presence of flammable chemicals such as natural gas, oil, and gasoline. Presence of any other chemical pollutants.	Notify appropriate city staff to investigate and determine chemical type. Remove contaminant by appropriate methods and dispose of as directed by hazardous waste protocols. Provide sign or stencil as necessary.	2, 5, 6	2-4 mh/cleanup

Watertight in this application shall mean a connection which prevents the flow of running water. Dripping is permissible provided it is less than 2 gallons per hour.

Inspection and Maintenance Action Checklist — Infiltration Basins/Trenches*

Inspection Frequency			Conditions to Check For	Action	Special Considerations	Man hours/ Action (est.)
Storm	Monthly	Annual				
X	X		**Trash and debris** of more than 1 cubic foot (1 garbage can).	Remove and dispose of waste.	2	1-2 mh/cf
		X	**Poorly draining facility**: operating on less than 90% of design capacity, or overflowing.	Remove and dispose of clogged filter media. Determine need for deep tilling or extensive replacement of filter media. Consider installation of sediment trap.	1, 2	1 mh/20 cy
		X	**Sediment or debris accumulations** exceeding 2 inches.	Remove with appropriate equipment to limit compaction or damage to infiltration media. Record amount of waste collected.	1, 2	1 mh/20 cy
	X		**Trash, debris, or sediment** in any inlet/ outlet pipe, sump, vault, manhole, catch basin, or settling pond.	Manually remove or use mechanical equipment such as jet or eductor.		1-2 mh/cy
		X	**Rock protection missing** from overflow spillway. Rock filter clogged or damaged.	Replace rock or gravel according to design specifications. Remove blockage manually or with appropriate equipment.	1	0.5 mh/sy
		X	**Erosion within facility**.	Determine cause of erosion and eliminate. Apply appropriate temporary erosion control BMPs. Evaluate options for permanent solution.	None	1-2 mh/sf
	X		**Odor, sludge, or color**. Presence of flammable chemicals such as natural gas, oil, and gasoline. Presence of any other chemical pollutants.	Notify appropriate city staff to investigate and determine chemical type. Remove contaminant by appropriate methods and dispose of as directed by hazardous waste protocols. Provide sign or stencil as necessary.	2, 5	2-4 mh/cleanup
		X	**Vegetation is sparse, unhealthy looking.** **Vegetation is overgrown.** **Vegetation poses potential health hazard** (poison oak, stinging nettles, tansy).	Determine cause of poor growth. Revegetate to specifications as necessary. Avoid use of fertilizers. Cut vegetation and remove cuttings. Remove mechanically or evaluate herbicide treatment. Apply approved herbicide conservatively and as directed.	2, 5	1-2 mh/100 sf

* Facilities may have unique O&M requirements or manuals. Consult supervisor.

Inspection and Maintenance Action Checklist — Catch Basins and Inlets

Inspection Frequency			Conditions to Check For	Action	Special Considerations	Man hours/ Action (est.)
Storm	Monthly	Annual				
X	X		**Trash, debris, and sediment on grating.** More than 1/2 cu ft in front of or on grating, blocking capacity by more than 10%	Remove and dispose of waste.	2	0.5-1 mh/grate
		X	**Sediment or debris in sump**. Depth exceeds 1/2 the distance between the bottom of basin and the invert of lowest pipe into or out of the basin.	Evaluate whether cleaning can be performed manually or mechanically. Perform work or contract out. Record amount of waste collected at each basin.	2	2 mh/sump
		X	**Trash or debris in any inlet or outlet pipe** blocking more than 1/3 of its height.	Manually remove or use mechanical equipment such as jet or eductor.	2	1-2 mh/cb
		X	**Structural damage** to catch basin frame or top slab: corner extends more than 3/4" past curb face; top slab has holes larger than 2 sq in or cracks wider than 1/4"; frame is 3/4" from flush on top slab	Repair, adjust or replace as necessary to eliminate hazards to street and sidewalk users and ensure that all stormwater flow enters catch basin. Investigate potential for repair work to coincide with road resurfacing.	1	4-8 mh/cb
		X	**Cracks in basin walls or bottom** exceeding 1/2" ×1', soil particles entering catch basin through cracks	If basin is structurally sound, patch or repair as necessary. If basin is not deemed structurally sound or cracks are greater than 3' in length, replace to design standards.	1	2-16 mh/cb
		X	**Settlement of basin** by more than 1" or rotation of more than 2" from alignment.	Repair, reset, or replace to design standards.	1	8-16 mh/cb
X	X		**Odor, sludge, or unusual color**. Presence of flammable chemicals such as natural gas, oil, and gasoline. Presence of any other chemical pollutants.	Notify appropriate city staff to investigate and determine chemical type. Remove contaminant by appropriate methods and dispose of as directed by hazardous waste protocols. Provide sign or stencil as necessary.	2, 5	2-4 mh/cleanup
X	X		**Vegetation visibly inhibiting flow**.	Depending on surrounding land use either cut vegetation or remove. Consult appropriate city staff regarding use of herbicides and timing of applications.	5	0.5-2 mh/cb
	X		**Broken grate.** Grate has multiple crack or any cracks longer than 2".	Replace Grate	5	

Inspection and Maintenance Action Checklist — Control Structures/Flow Restrictors

Inspection Frequency			Conditions to Check For	Action	Special Considerations	Man hours/ Action (est.)
Storm	Monthly	Annual				
	X		**Sediment, debris, or trash** is blocking or sump is less than 50% from restrictor/orifice plate	Remove and dispose of waste. Contract for cleaning if necessary.	2, 5	6-12 mh/structure
		X	**Structural integrity**. Tee-type flow restrictor is not securely attached to manhole wall and outlet pipe. Weir or baffle flow restrictor not securely attached to manhole. Flow restrictor is not plumb within 10% Connections to outlet pipe are leaking and show signs of rust Holes in plates, baffles, elbows, etc.	Determine best method for anchoring flow restrictor based on materials and severity of situation. Consult supervisor if necessary. Replumb and realign restrictor, securing as necessary. Repair or replace as necessary to eliminate leakage. Plug or patch holes if structural integrity is not affected. Replace part if possible, replace entire structure if severely failing.	1, 5	8-16 mh/repair
		X	**Cleanout shear gate damaged**, rusted, not watertight or missing. Gate cannot be adjusted by one person. Chain or rod is missing or damaged	Repair or replace to meet design standards. Repair, lubricate, or replace gate as necessary. Repair or replace chain or rod as necessary.	none	1-6 mh/repair
X	X		**Trash, sediment, or debris** blocking overflow pipe.	Remove material manually or with mechanical equipment. Contract for cleaning if necessary.	1, 4	4-8 mh/pipe

Inspection and Maintenance Action Checklist — Culverts

Inspection Frequency			Conditions to Check For	Action	Special Considerations	Man hours/ Action (est.)
Storm	Monthly	Annual				
		X	**Trash, debris, or sediment** filling more than 20% of the diameter of the pipe or trash rack or within 25 feet of pipe outlet.	Evaluate whether cleaning can be performed manually or mechanically using an eductor, jet or bucket loader. Perform work or contract out. Record amount of waste collected at each culvert.	2, 3	1-2 mh/cy
	X		**Vegetation** that reduces free movement of water through culvert.	Cut vegetation to 6 inches minimum and remove. Take care to limit damage to embankment and side slopes. Prune back woody vegetation without killing and leaving roots in place if possible.	2	0.5-1 mh/100 sf
		X	**Damage to pipe** such as rusting of more than 50% of wall area, bent or crushed ends. Major dents that significantly impede flow or decrease cross sectional area of pipe by more than 20% Cracks or tears that allow groundwater seepage	Repair or replace pipe as necessary.	1, 3, 6	1-3 mh/lf
		X	**Cracking or buckling of headwall**. Erosion or piping occurring at backside or around ends of headwall.	Determine extent of problem and monitor for changes. Contact appropriate city staff for evaluation. Repair or replace as necessary.	1	6-24 mh/headwall
	X		**Trash rack damaged or missing**.	Repair or replace as necessary. Provide means to remove trash rack using ordinary hand tools.	1	4-8 mh/rack
	X		**Missing rock or riprap** within upstream or downstream apron areas or side slopes. Active erosion within area.	Repair eroded areas as necessary. Determine cause of rock movement and replace with similar size rock or larger as necessary.	1	0.5-1 mh/cy

Inspection and Maintenance Action Checklist — Energy Dissipators*

Inspection Frequency			Conditions to Check For	Action	Special Considerations	Man hours/ Action (est.)
Storm	Monthly	Annual				
External Energy Dissipator						
		X	**Missing layer of rock** in area 5 sq ft or larger. Exposed soil.	Replace rock of size and at depth specified. Evaluate need to replace with larger rock.	1	1-2 mh/cy
		X	**Broken wires** in gabion structure.	Replace rock as necessary and wire shut. Evaluate need to replace structure.	none	0.5-1 mh/sf
Dispersing Trench						
		X	**Accumulated sediment** in pipe exceeds 20% of design depth.	Vacuum or jet clean pipe, catching or collecting sediment for proper disposal.	2	1-2 mh/cf
		X	**Discharge flow is concentrated**, not dispersed, causing erosion.	Regrade trench lip to provide "sheet" flow. Evaluate need to redesign and rebuild.	1	0.5-1 mh/lf
		X	**Perforated pipe is plugged** for half of openings.	Jet clean, catching sediment for proper disposal. Evaluate need to replace pipe.	2	1-2 mh/cf
		X	**Stormwater flows out** top of distribution manhole or catch basin.	Check outlet pipe for restrictions and clean if necessary. Confirm design storm parameters. Provide erosion control BMPs. Evaluate need to redesign and reconstruct.	1	1-2 mh/sf
		X	**Oversaturated receiving area**, slope failure; potential for landslide.	Divert flow if possible, stabilize bank using appropriate BMPs.	1	2-6 mh/sf
Manhole Chamber						
		X	**Worn or damaged dissipating structure** or walls exceed 1 sq ft.	Replace structure to design standards. Evaluate need for alternative design.	1	20-48 mh/structure

* See also "Catch Basins and Inlets" IMAC

Inspection and Maintenance Action Checklist — Oil/Water Separators*

Inspection Frequency			Conditions to Check For	Action	Special Considerations	Man hours/ Action (est.)
Storm	Monthly	Annual				
X	X		**Odor, sludge, or unusual color** of discharge water.	Determine reason for problem. Eliminate source if possible. Close effluent shutoff valve and clean facility. Replace standing water with clean water.	2	8-12 mh/ows
		X	**Depth of sediment exceeds 6 inches.**	Determine need to contract work out. Remove sediment using vacuum equipment and dispose of properly. Replace standing water with clean water.	2	6-8 mh/ows
		X	**Trash and debris accumulation** in vault, inlet/outlet pipes.	Remove and dispose of all floatable and non-floatable trash or debris.	2	4-8 mh/ows
		X	**Damage to inlet/outlet pipe.**	Repair or replace as necessary.	1	10-24 mh/pipe
		X	**Oil accumulation** exceeds 1 inch at water surface.	Determine need to contract work out. Extract oil by vacuuming methods. Clean and rinse all surfaces thoroughly. Dispose of oil in accordance with state and local regulations.	2	8-12 mh/ows
		X	**Oil absorbent pads** are saturated or missing.	Replace and dispose of properly.	2	2-4 mh/ows
		X	**Access cover damaged**, corroded or cannot be opened by one person.	Repair to specifications or replace.	1	4-8 mh/cover
		X	**Access ladder damaged**, corroded, misaligned, cracked, or with missing rungs.	Repair to specifications or replace.	1	4-8 mh/ladder
		X	**Cracks in vault** wider than 1/2 inch, evidence of soil infiltration, damage to structural stability.	Grout, repair as necessary, and evaluate need for extensive repair or replacement.	1, 5	16-24 mh/ows
		X	**Baffles damaged**, corroded, cracked, or warped.	Repair to specifications as necessary or replace.	1	24-72 mh/ows
		X	**Coalescing plates damaged**, broken, deformed, cracking.	Replace damaged portion of media pack or replace entire plate pack as necessary.	1	24-48 mh/ows

* Facilities may have unique O&M requirements or manuals. Consult supervisor.

Inspection and Maintenance Action Checklist — Ditches/Pipes*

Inspection Frequency			Conditions to Check For	Action	Special Considerations	Man hours/ Action (est.)
Storm	Monthly	Annual				
		X	**Trash and debris**. More than 1 cubic foot (1 garbage can).	Remove and dispose of waste.	2	1 mh/cf
		X	**Accumulated sediment** exceeds 20% of ditch depth or pipe diameter.	Remove and dispose of waste. Avoid altering ditch geometry unless planned and revegetated.	2	1 mh/cy
		X	**Vegetation or roots in pipe** reducing free flow of water.	Cut back vegetation or roots manually or contract out. Remove cuttings and dispose of waste.	2	0.5 mh/lf
		X	**Weedy shrubs or saplings in ditch** reducing free flow of water.	Manually cut or brush-hog. Remove cuttings and dispose of waste. Avoid disturbing soil and grasses.	2	0.5-1 mh/100 sf
		X	**Damaged pipe** (cracked, rusted, bent, or crushed).	Repair or replace. Evaluate need to upgrade entire system.	1	2-6 mh/lf
	X		**Erosion on ditch** sides or bottom, or banks.	Determine cause of erosion and eliminate. Provide temporary erosion control and consult appropriate city staff for permanent solution.	1	1-2 mh/sf
		X	**Rock lining out of place or missing** (if applicable).	Replace rock to design level. Determine cause of damage and consult appropriate city staff if necessary for permanent solution.	1	0.5 mh/cy

* Excluding those used by salmonids.

Inspection and Maintenance Action Checklist — Biofilters (Swales, Filter Strips)

Inspection Frequency			Conditions to Check For	Action	Special Considerations	Man hours/ Action (est.)
Storm	Monthly	Annual				
X	X		**Dumping of waste** such as grass clippings, branches, and garbage. Unsightly accumulation of trash.	Remove and dispose of waste. Talk to adjacent landowners regarding water quality and dumping. Notify the appropriate city staff to send educational flyers.	2	1 mh/cf
		X	**Sediment accumulation** exceeding 4 inches, particularly within first several feet of biofilter.	Remove and dispose of sediment without damaging biofilter shape and vegetation. Restore disturbed areas.	2, 6	0.5-1 mh/cy
X	X		**Erosion damage**. Action is necessary if erosion is over 2 inches deep or greater than 10 square feet in area, or if the potential for continued erosion exists.	Determine cause(s) of erosion and eliminate. Stabilize area using permanent erosion control measures. Replant using appropriate species vegetation.	1, 4	1-2 mh/sf
	X	X	**Poor vegetation growth** **Excessive vegetation growth** **Weedy species.**	Aerate soil and reseed; mow grassy biofilters regularly; cut other vegetation to 2 inches above design water surface depth and remove cuttings promptly; pull weeds or selectively apply approved herbicide, following all precautionary measures.	2, 4, 5	0.5-1 mh/sf
	X		**Operation**. Swale has been filled in or blocked by adjacent land owner.	Request owner to restore original configuration. Report problem to enforcement personnel if problem is not rectified promptly.	none	1 mh/occurrence
		X	**Hydraulic performance**. Imperceptible flow velocity within swale or stagnation indicated by dead or dying vegetation, algae growth.	Check for blockage downstream and remove if action is not deemed to cause additional problems. If no blockage, request survey to check grade, if less than 1%, consult appropriate city staff regarding installation of underdrains and replanting.	1, 6	1-2 mh/occurrence
		X	**Hydraulic performance**. Flow has become channelized and does not spread over bottom of swale.	Recontour and replant biofilter bottom; consider installing a flow spreader device.	1, 4, 6	0.5-2 mh/lf
		X	**Pollutant removal**. Visual discharge of sediment or other pollutants at downstream end.	Check biofilter for sediment source, e.g., erosion; check for upstream sources and implement source control; modify biofilter as necessary to remove pollutant, e.g., increase vegetation density or height, increase swale length, install catch basin or construct sedimentation forebay, clean catch basin or sedimentation forebay, consider construction of high flow bypass.	1, 4, 6	3-16 mh/occurrence

Inspection and Maintenance Action Checklist — Constructed Wetlands, Wet Ponds

Inspection Frequency			Conditions to Check For	Action	Special Considerations	Man hours/ Action (est.)
Storm	Monthly	Annual				
	X		**Yard waste, trash, and debris** of more than 1 cu ft (1 garbage can)	Remove and dispose of waste. Notify appropriate city staff for potential enforcement or public education.	2	1 mh/cf
		X	**Trash rack or bar screen** missing or more than 25% covered	Remove debris and dispose of waste. Repair or replace rack as necessary.	2	0.5-1 mh/screen
	X		**Weedy, invasive or poisonous vegetation** such as blackberry, purple loosestrife, tansy ragwort, poison oak, stinging nettles, etc. **Sparse vegetation**, sickly or overgrown.	Ask if there is an O&M plan for the facility or if an evaluation by a wetland ecologist is recommended prior to maintenance. If not, remove manually or use mechanical equipment as necessary; minimize disturbance to other vegetation. Do not spray pesticides without consulting appropriate city staff. Determine cause of poor plant growth; correct problem and replant as specified or directed by appropriate city staff. If vegetation is cut, remove all cuttings and dispose offsite.	1, 2, 5, 6	0.5-1 mh/ 100 sf
		X	**Inlet, outlet, or rock window clogged** with sediment or debris.	Remove blockage manually or with appropriate equipment. Minimize disturbance to surrounding vegetation. Evaluate need for facility modifications to eliminate problem.	6	0.5 mh/sy
		X	**Sediment accumulation** interfering with treatment function.	Remove sediment using appropriate equipment to restore design contours. Minimize disturbance to surrounding vegetation and replant as necessary using specified vegetation.	1, 2, 4, 6	1-2 mh/cy
		X	**Settlement of structures** dikes, berms, pipes, by more than 10%	Notify appropriate city staff and request an inspection. Stabilize slopes or structures as necessary until final evaluation and specific solution is determined.	1	0.5-1 mh/cy
X	X		**Odor, sludge, or unusual color**. Presence of flammable chemicals such as natural gas, oil, or gasoline. Presence of other chemical pollutants.	Notify appropriate city staff to investigate and determine chemical type. Remove contaminant by appropriate methods and dispose of as directed by hazardous waste protocols. Provide sign or stencil as necessary.	2, 5	2-4 mh/cleanup
		X	**Overflow berms or spillways exposed** and either actively eroding or vulnerable to erosion.	Replace armoring or replant as specified in design plans and specifications.	1, 4	0.5 mh/cy
		X	**Erosion** at inlet or on side slopes or scouring of pond bottom of > 6".	Consult appropriate city staff on cause of erosion. Stabilize eroded areas ASAP using proper erosion control methods.	1, 4	1-2 mh/sf
		X	**Rodent holes.** Any evidence of rodent holes in facility dam/berm, or any evidence of water piping through dam/berm via rodent holes	Destroy rodents and repair dam or berm. Contact the County Health Department for guidance.		

Inspection and Maintenance Action Checklist — Streams and Wetlands*

Inspection Frequency			Conditions to Check For	Action	Special Considerations	Man hours/ Action (est.)
Storm	Monthly	Annual				
		X	**Trash and debris** of more than 1 cubic foot (1 garbage can).	Remove and dispose of waste.	2	0.5-1 mh/cf
	X		**Trash or debris in any inlet or outlet pipe** blocking more than 1/3 of its height.	Manually remove debris and dispose of waste.	2	1-2 mh/cf
	X		**Encroachment, clearing, or construction of structures** within stream, wetland, or buffers.	Notify supervisor immediately to investigate.	3	0.5 mh/ incident
		X	**Sediment or debris accumulations** exceed 20% of active channel depth or 4 inches, whichever is less.	Determine probable cause and eliminate. Evaluate whether cleaning can be performed manually or mechanically. Notify and consult supervisor before proceeding.	1, 2, 3	0.5-1 mh/cy
	X		**Erosion damage**, slope failures.	Provide TESC BMPs as soon as possible. Consult appropriate city staff for long-term solution.	3	1-2 mh/cf
	X		**Dead fish, mammals, or amphibians**.	Notify appropriate city staff and health officials immediately to investigate. Do not remove bodies until directed.	5	1 mh/ incident
X	X		**Unusual color, odor, or volume of existing discharge** to or from stream or wetland.	Notify appropriate city staff immediately to investigate.	none	0.5-1 mh/ incident
X			**Odor, sludge, or color**. Presence of flammable chemicals such as natural gas, oil, and gasoline. Presence of any other chemical pollutants.	Notify appropriate city staff to investigate and determine chemical type. Remove contaminant by appropriate methods and dispose of as directed by hazardous waste protocols. Provide sign or stencil as necessary.	5	1 mh/ incident
X			**Vegetation is sparse or unhealthy.** **Vegetation is overgrown and inhibits flow.** **Vegetation is weedy or poses a health or safety hazard.**	Determine cause of problem and eliminate. Replant using appropriate native vegetation. Cut or pull vegetation and dispose of waste.	4	0.5-1 mh/ 10 sf
		X	**Illicit pipes, culverts, or drainage ways**	Notify appropriate city staff immediately to investigate. Contact owners to remove or reroute conveyance structure and restore area.	1, 3	1-2 mh/ incident

* See the discussions in this chapter on work in sensitive areas and on permits and regulations prior to performing work in streams or wetlands.

Inspection and Maintenance Action Checklist — Monitoring Station*

Inspection Frequency			Conditions to Check For	Action	Special Considerations	Man hours/ Action (est.)
Storm	Monthly	Annual				
	X		Sediment accumulation in stilling well exceeds 1-2 cubic feet.	Remove by hand or by vacuum, depending on accessibility.	none	1-2 mh/cf
		X	Vegetation interferes with access or accurate flow measurement.	Trim or prune vegetation as necessary without disturbing ground surface.	none	0.5-1 mh/ 100 sf
X	X		Debris or channel changes interfere with normal flow through control section.	Remove debris as necessary to restore normal flow or evaluate need to move station.	3	1-2 mh/cf
X	X		Disturbed or damaged monitoring equipment.	Evaluate need to replace station, completely or in part.	none	no est.
		X	Access route damaged or overgrown with woody vegetation.	Cut and remove vegetation, repair minor damage by hand; revegetate.	none	0.5-1 mh/ 100 sf
X	X		Erosion of streambank or area adjacent to monitoring station.	Install biotechnical slope protection. Consult appropriate city staff for design recommendations.	1	1-2 mh/sf
		X	Native vegetation missing or damaged.	Revegetate using appropriate native plants and methods.	4	0.5-1 mh/10 sf

* Work to be performed by appropriate city staff, or with authorization.

Inspection and Maintenance Action Checklist — Access Roads & Easements

Inspection Frequency			Conditions to Check For	Action	Special Considerations	Man hours/ Action (est.)
Storm	Monthly	Annual				
		X	No access road for maintenance by motorized equipment.	Determine whether an easement to drainage feature exists. If so, obtain City permits and construct gravel (or equivalent) access road. If not, call lack of easement to City's attention.	1, 3	No estimate
	X		Debris blocks access or could damage vehicle tires (glass or metal).	Remove debris.	2	1 mh/cf
		X	Obstructions reduce clearance above road surface to less than 14 feet.	Clear overhead area to 14 feet high.	5	1 mh/100 sf
X		X	Settlement, potholes, mush spots, or ruts exceed 6 inches in depth or 6 square feet in area. Surface defect hinders or prevents maintenance access.	Grade road uniformly smooth with no evidence of settlement, potholes, mush spots, or ruts. Apply additional gravel or pit-run rock as needed	none	0.5 mh/sf
		X	Woody vegetation or excessive weed cover blocks vehicular access.	Remove woody growth; cut back weeds regularly or when they encroach on road surface.	2	0.5-1 mh/ 100 sf
		X	Erosion damage is within 1 foot of the roadway and is more than 8 inches wide and 6 inches deep.	Place fill material or rock to match the surrounding slope; Revegetate as necessary.	4	0.5-1 mh/cy

Inspection and Maintenance Action Checklist — Fencing & Gates

Inspection Frequency			Conditions to Check For	Action	Special Considerations	Man hours/ Action (est.)
Storm	Monthly	Annual				
		X	Fence posts out of plumb more than 6 inches.	Straighten posts to within 1½ inches of plumb.	none	0.5 mh/post
		X	Fence rails bent more than 6 inches.	Straighten bends of more than 1 inch.	none	0.5 mh/10 lf
		X	Any part of fence (including posts, top rails, and fabric) more than 1 foot out of design alignment.	Align fence to meet design standards.	none	0.5-2 mh/10 lf
		X	Missing or loose tension wire.	Re-tension wire in place.	none	0.5 mh/10 lf
		X	Barbed wire is sagging more than 2½ inches between posts or is missing.	Restring or tighten wire to less than 3/4-inch sag between posts.	none	0.5 mh/10 lf
		X	Extension arm is missing, broken, or bent out of shape more than 1½ inch.	Straighten or replace arm with no bends larger than 3/4 inch.	none	0.5-1 mh/arm
		X	Paint or decorative coating exhibits rusting or scaling condition affecting structural adequacy.	Replace with structurally adequate posts or parts, or parts with a uniform protective coating.	none	2-3 mh/50 sf
	X		Openings in wire fence fabric are such that 8-inch ball could fit through.	Repair fence to eliminate all large openings.	none	1-2 mh/50 sf
	X		Gate is broken, jammed, or missing.	Repair or replace as necessary to allow entry of people and maintenance equipment. Provide staff with duplicate keys to new locks.	none	1-8 mh/gate
	X		Gate cannot be easily opened or closed by maintenance person due to broken or missing hinges.	Replace and lubricate hinges as necessary.	none	1-4 mh/gate
		X	Gate is out of plumb more than 6 inches and more than 1 foot out of design alignment.	Align and plumb to allow free-swinging operation.	none	1-4 mh/gate
			Stretcher bar, stretcher bands, or ties are missing.	Replace stretcher bar, bands, and ties.	none	2-4 mh/gate
	X		Defect in fence or vegetation screen permits easy entry to facility.	Mend fence or replace shrubs to form a solid barrier.	none	2-4 mh/10 lf

Inspection and Maintenance Action Checklist — Grounds Maintenance (Landscaping)

Inspection Frequency			Conditions to Check For	Action	Special Considerations	Man hours/ Action (est.)
Storm	Monthly	Annual				
	X		Vegetation is overgrown or dominated by weeds.	Trim, prune, and weed to provide appealing aesthetics. Follow City vegetation management guidelines.	none	2-4 mh/100 sf
	X		Weeds occupy more than 20% of the landscaped area.	Remove weeds to less than 5% of the landscaped area.	2	0.5-1 mh/100 sf
	X		Poison ivy, other poisonous vegetation, or insect nests present a safety hazard.	Remove poisonous vegetation or insect nests using best professional judgment of methods and safety precautions.	2, 5	1-2 mh/100 sf
X	X		Unsightly accumulation of trash or debris	Remove and dispose of trash or debris.	2	0.5 mh/cf
X	X		Noticeable erosion such as rills in landscaped areas	Identify cause of erosion. Slow down or spread out surface water flow. Fill, contour, and seed eroded areas.	4	1-2 mh/tree
		X	Limbs or part of trees or shrubs are split or broken, affecting more than 25% of the total foliage of the plant.	Trim or prune trees or shrubs to restore shape. Do not top. Replace severely damaged trees or shrubs.	2	2-4 mh/tree
	X		Trees or shrubs have been blown over or knocked down.	Inspect for injury to stem or roots; replant if possible. Replace if severely damaged.	none	1-2 mh/tree
		X	Trees or shrubs are leaning over, exposing the roots.	Place stakes and rubber-coated ties around young trees or shrubs for support.	none	0.5-1 mh/tree

STORMWATER FACILITY
INSPECTION/MAINTENANCE FIELD FORM

Facility Type:	
Facility Location (name):	
Inspection Date:	
Inspected By:	

Insp. Freq. (S/M/A)	Conditions Checked	Observations	Actions Taken or Required	Date Action Taken	Actual mh/action

S/M/A - Storm, Monthly, Annual

MASTER MAINTENANCE SCHEDULE													
Year: 2004													
	Storm[a]	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Detention Ponds	Tr/Sed/Clg	M: Tr/Sed/Er/ Veg/Chem	M: Tr/Sed/Er/ Veg/Chem	A: Str/Veg							A: Str/Veg	M: Tr/Sed/Er/ Veg/Chem	M: Tr/Sed/Er/ Veg/Chem
Detention Ponds													
Infiltration Basins													
Catch Basins													
Control Structures													
Culverts													
Energy Dissipators													
Oil/Water Separators													
Ditches/Pipes													
Biofilters													
Constructed Wetlands													
Misc. Stormwater Facility													

a. Storm activities to be carried out after any major storm (0.8" in 24 hours)]

Key: Tr = Trash; Sed = Sediment; Clg = Clogging; Er = Erosion; Veg = Vegetation; Chem = Chemicals; Str = Structural
Inspection: M = Monthly; A = Annual
Maintenance: Normal or Preventive